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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,142	11/14/2001	Georg Ockenfuss	102.01	8535

27975 7590 01/27/2004

ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A.  
1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE  
P.O. BOX 3791  
ORLANDO, FL 32802-3791

EXAMINER

LAVARIAS, ARNEL C

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 01/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/004,142	OCKENFUSS ET AL.	
	Examiner	Art Unit	
	Arnel C. Lavarias	2872	NW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-15, 22-26 and 29-32 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 12-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-26 and 29-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendments to Claim 22 in the paper filed 12/8/03 are acknowledged and accepted.
2. In view of the declaration submitted as part of the paper filed 12/8/03 (See Declaration of Common Ownership filed 12/8/03), Applicants' request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### ***Response to Arguments***

3. The Applicants' arguments, see Pages 7-8 of remarks, filed 12/8/03, with respect to the rejection(s) of Claim(s) 22-26, 29-32 under 35 U.S.C.(a) have been fully considered and are persuasive. Therefore, the rejections (See Sections 7-14 in Office Action dated 11/19/03) have been withdrawn.
4. Claims 22-26, 29-32 are now rejected as follows.

### ***Claim Objections***

5. Claims 22-26, 29-32 are objected to because of the following informalities:  
Claim 22, line 3- 'e)' should read 'a)'. Claims 23-26, 29-32 are dependent on Claim 22, and hence inherit the deficiencies of Claim 22.

Claim 22, line 7- 'f)' should read 'b)'. Claims 23-26, 29-32 are dependent on Claim 22, and hence inherit the deficiencies of Claim 22.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. (U.S. Patent No. 5080739), of record, in view of Gasparian (U.S. Patent No. 4373775), of record, and Mahlein et al. (U.S. Patent No. 4097126).

Fernandez et al. discloses an optical filter assembly (See for example Figures 3, 6) comprising a first (See 14 in Figure 3) frame member having a first planar surface that substantially surrounds a central opening (See 18 in Figure 3), the first frame member having a first coefficient of thermal expansion (The Examiner notes that the material of the frame will inherently have a coefficient of thermal expansion); a multilayer thin-film interference filter (See 10 in Figure 3) originally formed on a substrate (See 12 in Figure 3) and partially released therefrom to eliminate stresses therebetween (See Figures 1-3; col. 2, line 67-col. 3, line 50), having a first surface attached to the planar surface of the first frame member to define an unobstructed optical aperture through the multilayer interference filter, the multilayer interference filter having a second coefficient of thermal

expansion (The Examiner notes that the materials of the multilayer interference filter will inherently have a coefficient of thermal expansion). Fernandez et al. lacks the multilayer thin film interference filter originally being released from the substrate forming a freestanding filter, and the coefficient of thermal expansion of the multilayer interference filter being smaller than the coefficient of thermal expansion of the frame such that the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter. However, Gasparian teaches a bi-directional wavelength dependent beam splitter including a thin film dichroic filter (See for example Figure 2), wherein the thin film dichroic filter (See 11 in Figure 1; 20 in Figure 2) is formed on a substrate (See 10 in Figure 1) by a deposition and then totally removed from the substrate by submerging the filter on the substrate in a suitable solvent to release the thin film dichroic filter from the substrate (See col. 2, lines 38-60; col. 3, lines 4-60). Further, Mahlein et al. teaches an optical layer device having a substrate with multiple layers deposited on the surface of the substrate and the substrate being mounted on a holder (See Figures 1-2; col. 2, line 43-col. 4, line 36). In particular, Mahlein et al. teaches the idea that the coefficient of thermal expansion of an optical element (See for example 6, 7 in Figure 2) may be smaller than the coefficient of thermal expansion of the frame (See 8 in Figure 2) supporting the optical element such that the frame member applies stress to the multilayer interference filter during changes in temperature (See col. 3, line 58-col. 4, line 21). The Examiner notes that since the spectral characteristics of multilayer interference filters are temperature dependent, providing a frame with a higher coefficient

of thermal expansion than that of the multilayer interference filter will act to reduce the shift in the center wavelength of the filter. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the multilayer thin film interference filter originally be released from the substrate forming a freestanding filter, and the coefficient of thermal expansion of the multilayer interference filter be smaller than the coefficient of thermal expansion of the frame such that the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter, as taught by Gasparian and Mahlein et al., in the optical filter assembly of Fernandez et al. One would have been motivated to have the multilayer thin film interference filter originally be released from the substrate forming a freestanding filter for the purpose of minimizing transmission losses due to the presence of a substrate, while providing for an extremely thin filter. One would have been motivated to have the coefficient of thermal expansion of the multilayer interference filter be smaller than the coefficient of thermal expansion of the frame such that the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter, for the purpose of providing adjustability of the radius of curvature of the filter surface, such that the filter surface may be adjusted as close to planar (flat) as possible.

8. Claims 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Gasparian and Mahlein et al.

Fernandez et al. in view of Gasparian and Mahlein et al. discloses the invention as set forth above in Claim 22, except for the first frame member being annular and being comprised of metal. However, Mahlein et al. additionally teaches that in fabricating the optical layer device (See Figure 2), a metallic ring may be used (See 8 in Figure 2; col. 3, line 57-col. 4, line 36) for mounting the optical element. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first frame member be annular and be comprised of metal, as taught by Mahlein et al., in the optical filter assembly of Fernandez et al. in view of Gasparian and Mahlein et al., to provide a larger, thermal expansion of the frame, as well as to provide even and uniform stretching around the edges of the filter layer as the temperature changes.

9. Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Gasparian and Mahlein et al.

Fernandez et al. in view of Gasparian and Mahlein et al. discloses the invention as set forth above in Claim 22, except for the first frame member being comprised of stainless steel or having a coefficient of thermal expansion in the range  $103 \cdot 10^{-7}/K$  -  $179 \cdot 10^{-7}/K$ . It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first frame member be comprised of stainless steel (which inherently has a coefficient of thermal expansion in the range of  $110 \cdot 10^{-7}/K$  -  $190 \cdot 10^{-7}/K$ ), since it has been held to be within the ordinary skill of worker in the art to select a known material on the basis of its suitability for the intended use. One would have been motivated to have the first frame member be comprised of stainless steel for the purpose of providing strength and rigidity to the filter assembly. The Examiner further notes that

material choice determines the selected value for the coefficient of thermal expansion.

*Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

10. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Gasparian and Mahlein et al. as applied to Claim 22 above, and further in view of Shirasaki (U.S. Patent No. 5982488), of record.

Fernandez et al. in view of Gasparian and Mahlein et al. discloses the invention as set forth above in Claim 22, except for the optical filter assembly further comprising a second frame member with a central opening therethrough attached to a second surface of the multilayer interference filter, wherein the optical aperture through the multilayer interference filter is substantially unobstructed. However, Shirasaki discloses an optical filter including a first (See 501, 505 in Figure 6(A)) frame member having a first planar surface that substantially surrounds a central annular opening (See 505 in Figure 6(A); Figure 6(B); col. 10, lines 7-33), the first frame member having a first coefficient of thermal expansion (See col. 10, lines 7-16); an etalon filter having a first surface attached to the planar surface of the first frame member to define an unobstructed optical aperture (See 201, 202 in Figure 6(A)), the multilayer thin-film interference filter having a second coefficient of thermal expansion smaller than the first coefficient of thermal expansion (See col. 10, lines 7-16), whereby the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter (See col. 5, line 32-col. 8, line 20). Shirasaki additionally discloses a second frame member (See 501, 504 in Figure 6(A)) with a central annular opening therethrough attached to a second surface of the

multilayer interference filter, wherein the optical aperture through the multilayer interference filter is substantially unobstructed. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the optical filter assembly further comprise a second frame member with a central opening therethrough attached to a second surface of the multilayer interference filter, wherein the optical aperture through the multilayer interference filter is substantially unobstructed, as taught by Shirasaki, in the optical filter assembly of Fernandez et al. in view of Gasparian and Mahlein et al., for the purpose of protecting the multilayer thin-film interference filter, as well as more uniformly distributing the tensile stress applied by the frames onto the multilayer thin-film interference filter, thus more efficiently compensating for changes in optical distance of the filter with changes in temperature.

11. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Gasparian and Mahlein et al. as applied to Claims 22-23 above, and further in view of Shirasaki.

Fernandez et al. in view of Gasparian and Mahlein et al., and further in view of Shirasaki discloses the invention as set forth above in Claims 22-23, except for the second frame member also being annular. It is noted that Shirasaki discloses that the first and second frame members (See 501/504, 501/505 in Figures 6(A), 6(B)) generally have the same shape. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to also have the second frame member be annular in the optical filter assembly of Fernandez et al. in view of Gasparian and Mahlein et al., and further in view of Shirasaki, for the purpose of providing even and uniform stretching

Art Unit: 2872

around the edges of the filter layer and on both sides of the filter layer as the temperature changes.

12. Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Gasparian and Mahlein et al. as applied to Claims 22-23 above, and further in view of Shirasaki.

Fernandez et al. in view of Gasparian and Mahlein et al., and further in view of Shirasaki discloses the invention as set forth above in Claims 22-23, except for the second frame member also being comprised of stainless steel or having a coefficient of thermal expansion in the range  $103 \cdot 10^{-7}/K$  -  $179 \cdot 10^{-7}/K$ . It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the second frame member also be comprised of stainless steel (which inherently has a coefficient of thermal expansion in the range of  $110 \cdot 10^{-7}/K$  -  $190 \cdot 10^{-7}/K$ ), since it has been held to be within the ordinary skill of worker in the art to select a known material on the basis of its suitability for the intended use. One would have been motivated to have the first frame member be comprised of stainless steel for the purpose of providing strength and rigidity to the filter assembly. The Examiner further notes that material choice determines the selected value for the coefficient of thermal expansion. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

*Conclusion*

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST. **Please note that after January 20, 2004, the examiner may be reached at the new telephone number: 571-272-2315.**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Application/Control Number: 10/004,142

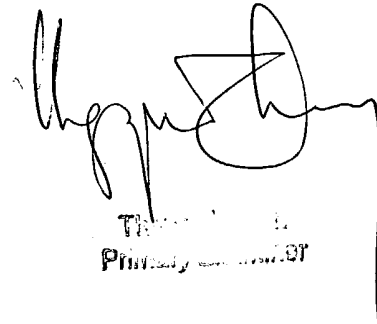
Page 11

Art Unit: 2872

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias  
1/9/04



THOMAS L.  
Primary, 703-308-1782